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GGSIPU physics 2008

1. How many seconds are there in a light Fermi ?

(a) 10^{-15} s (b) 3.0×10^{8} s

(c) 3.33×10^{-24} s (d) 3.3×10^{-7} s

2. A machine is delivering constant power to drive a body along a straight line .What is the relation between the distance travelled by the against time ?

(a) s^2 ó t^3 (b) s^2 ó t^{-3}

(c) s^3 ó t^2 (d) s ó t^3

3. The square of resultant of two equal forces in three times in their product.Angle between the force is

(a) ® (b) $\frac{\pi}{2}$

(c) $\frac{\pi}{4}$ (d) $\frac{\pi}{3}$

4. A object palced on a ground is in stable equilibrium.If the object is given a slight push then initially the position of centre of gravity

(a) moves nearer to ground

(b) rises higher above the ground

(c) remains as such

(d) may remain at same level

5. How much work must be done by a force on 50 kg body in order in order to accelerate in form rest to 20 m/s in 10 s ?

(a) 10^3 j (b) 10^4 j

(c) 2×10^3 j (d) 4×10^4 j

6. Moments of inertia of circular loop of radius R about the axis of rotation parallel to horizontal diameter at a distance R/2 from it is :

(a) MR^2 (b) $\frac{1}{2}MR^2$

(c) $2\ MR^2$ (d) $\frac{3}{4}MR^2$

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7. What will happen to the weight of the body at the south pole,if the earth stops rotating about its polar axis ?

(a) No change (b) Increases

(c) Decreases but does not become zero

(d) Reduces to zero

8. A beam of supported at the two ends is loaded at the centre .The depression at the centre is proportional to

(a) Y^2 (b) Y

(c) $\frac{1}{Y}$ (d) $\frac{1}{Y^2}$

9. A common hydrometer reads specific gravity of liquids.Compared to the 1.6 mark of the stem the mark 1.5 will be

(a) upwards (b) downwards

(c) in the sme place

(d) may be upward and downward are depending upon the hydrometer

10. A balloon contains 500 m^3 of He at 27^0 C and 1 atmospheric pressure .The volume of He at -3^0C and 0.5 atmospheric pressure will be

(a) 700 m^3 (b) 900 m^3

(c) 1000 m^3 (d) 500 m^3

11. Which of the following is different from others ?

(a) Wavelength (b) Velocity

(c) Frequency (d) Amplitude

12. Two pendulums have time periods T and 5T/4.They starts SHM at the same time from the mean position.What will be the phase difference between them after the bigger pendulum completed one oscillation ?

(a) 45^0 (b) 90^0

(c) 60^0 (d) 30^0

13. A balloon is filled with hydrogen.For sound waves,this balloon behaves like

(a) a converging lens

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(b) a diverging lens

(c) a concave mirror

(d) none of the above

14. Each of the two point charges are doubled and their distance is halved.Force of interaction becomes n times,where n is

(a) 4 (b) 1 (c) 1/16 (d) 16

15. Two soap bubbles have radii on the ratio of 2:1.What is the ratio of excess pressures inside them ?

(a) 1:2 (b) 1:4

(c) 2:1 (d) 4:1

16. The phenomenon of Browwnian movement may be taken as evidence of

(a) Kinetic theory of mater

(b) EMT of radiation

(c) corpuscular theory of light

(d) photoelectric phenomenon

17. Two sound waves of slightly different frequency propagating in the same direction produce beats due to

(a) interference (b) diffraction

(c) reflection (d) refraction

18. An ice block floats in a liquid whose density is less than water.A part of block is outside the liquid .When whole of ice has melted,the liquid level will

(a) rise (b) go down

(c) remain same (d) first rise then go down

19. Two bodies of different masses of 2 kg and 4 kg moving with velocities 2 m/s and 10 m/s towards each other due to matual gravitational attraction.What is the velocity of their cenre of mass ?

(a) 5 m/s (b) 6 m/s

(d) 8 m/s (d) zero

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20. Given that the displacement of an oscillating particle is given by y= A sin (Bx+Ct+d).The dimensional formula for (ABCD) is

(a) $[M^0L^{-1}T^0]$ (b) $[M^0L^0T^{-1}]$

(c) $[M^0L^{-1}T^{-1}]$ (d) $[M^0L^0T^0$

21. Two waves having intensities in the ratio of 9:1 produce interference.The ratio of maximum to minimum intensity is equal to

(a) 10:8 (b) 9:1

(c) 4:1 (d) 2:1

22. Four wear each of same length,diameter and material are connected to each other to form a square.If the resistance of each wire is R,then equivalent resistance across the opposite corner is

(a) R (b) R/2

(c) R/4 (d) none of these

23. An electric motor runs on DC source of emf 200 V and draws a current of 10 A.If the efficiency be 40% then the resistance of armature is

(a) 2 t (b) 8 t

(c) 12 t (d) 16 t

24. A capacitor having capacity of 2.0 «F is charged to 200 V and then the plates of the capacitor are connected to a resistance wire.The heat produced in joule will be

(a) $2x10^{-2}$ (b) $4x10^{-2}$

(c) $4x10^4$ (d) $4x10^{10}$

25. A voltmeter of range 2V and resistance 300 t cannot be converted into ammeter of range

(a) 1 A (b) 1 mA

(c) 100 mA (d) 10 mA

26. If a magnet is suspended at angle 30^0 to the magnetic meridian ,the dip needle makes angle of 45^0 with the horizontal,the real dip is

(a) $\tan^{-1}(\sqrt{3}/2)$ (b) $\tan^{-1}(\sqrt{3})$

(c) $\tan^{-1}(\sqrt{3}/2)$ (d) $\tan^{-1}(2/\sqrt{3})$

27. Which quantity is increased in step-down transformer ?

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(a) Current (b) Voltage

(c) Power (d) Frequency

28. The ratio of intensity at the centre of a bright fringe to the intensity at a point distant one fourth of the distance between two successive bright fringes will be

(a) 4 (b) 3 (c) 2 (d) 1

29. Which has more luminous efficiency ?

(a) A 40 W bulb

(b) a 40 W fluorescent tube

(d) Both have same

(d) Cannot say

30. When a ray of light enters from one medium to another,then its velocity in second medium becomes double.The maximum value of angle of incidence,so that total internal reflection may not take place will be

(a) 60^0 (b) 180^0

(c) 90^0 (d) 30^0

31. What should be the velocity of an electron so that its momentum becomes equal to that of a photon of wavelength 5200 $\mathring{A}$?

(a) 700 m/s (b) 1000 m/s

(c) 1400 m/s (d) 2800 m/s

32. A radioactive element has half-life period of 600 yrs.After 3000 yrs,what amount will remain

(a) $\frac{1}{2}$ (b) $\frac{1}{16}$

(c) $\frac{1}{8}$ (d) $\frac{1}{32}$

33. Beyond which frequency,the ionsphere bends any incident electromagnetic radiation but do not reflect it back towards the earth ?

(a) 50 MH_z (b) 40 MH_z

(c) 30 MH_z (d) 20 MH_z

34. In intrinsic semiconductor at room temperature number of electrons and holes are

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(a) equal (b) zero

(b) unequal (d) infinite

35. The unit of thermal conductance is

(a) WK^{-1} (b) JK^{-1}

(c) WK (d) JK

36. The value of P so that the vectors $2\hat{i}+\hat{j}+\hat{k}$, $\hat{i}+2\hat{j}-3\hat{k}$ and $3\hat{i}+P\hat{j}-5\hat{k}$ are complainer should be :

(a) 16 (b) -4

(b) 4 (d) -8

37. A capacitor of capacitance C has charge Q and stored energy W.If the charge is increased to 2Q,the stored energy will be

(a) $\frac{W}{4}$ (b) $\frac{W}{2}$

(c) 2W (d) 4W

38. Pure silicon at 300 K has equal electron n_e and hole (n_h) concentration of 1.5×10^{16} m^{-3}.Doping by indium increases n_h to 4.5×10^{22} m^{-3}.The n_e in the doped silicon is

(a) 9×10^{5} (b) 5×10^{9}

(c) 2.25×10^{11} (d) 3×10^{19}

39. A cylindrical conductor is placed near another positively charged conductor.The net charge acquired by the cylindrical conductor will be

(a) positive only

(b) negative only

(c) zero

(d) either positive or negative

40. If the unit of force is 1 kilo newton,the length is 1 km and time 100 s,what will be the unit of mass ?

(a) 1,000 kg (b) 1 kg

(c) 10,000 kg (d) 100 kg

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41. The maximum tension which an inextensible ring of mass 0.1 kg/m can bear is 10 N.The maximum velocity in m/s with which it cab be rotated is

(a) 10 (b) $\sqrt{10}$

(c) 20 (c) 15

42. If there were a reduction in gravitational effect,which of the following forces do you think would change in some respect ?

(a) Magnetic force (b) Electrostatic force

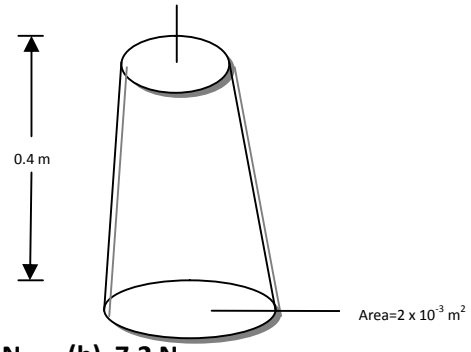
(c) Viscous force (d) Archimedes' uplift

43. The breaking force for a diameter D of a material is F.The breaking force for a wire pof the same material is F.The breaking force for a wire of the same material of radius D is

(a) F (b) 2F

(c) $\frac{F}{4}$ (d) 4F

44. A uniformly tapering vessel is filled with a liquid of density 900 kg/m^3.The force that acts on the base of the vessel due to the l Area=10^{-3} m^2 .0 m/s^2)



(a) 3.6 N (b) 7.2 N

(c) 9.0 N (d) 14.4 N

45. If pressure of a gas contained in a closed vessel is increased by 0.4% when heated by 1^0 C,its initial temperature must be

(a) 250 K (b) 250^0 C

(c) 2500 k (d) 25^0 C

46. Lines of force due to earth's horizontal magnetic field are

(a) parallel and straight

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(b) concentric circles

(c) elliptical

(d) curved lines

47. Two thermometers are constructed in the same way except that one has a spherical bulb and the other a cylindrical bulb,which one will respond quickly to temperature changes ?

(a) Spherical bulb thermometer

(b) Cylindrical bulb thermometer

(c) Both equally

(d) None of the above

48. What is the fractional change in the tension necessary in a sonometer of fixed length to produce a note one octave lower than before ?

(a) $\frac{1}{4}$ (b) $\frac{1}{2}$

(c) $\frac{2}{3}$ (d) $\frac{3}{4}$

49. If battery of 6 V is connected to the terminals of three meter long wire of uniform thickness and resistance of the order of 100 ohm,the difference of potential between two points separated by 50 cm in the wire will be

(a) 1 V (b) 1.5 V

(c) 2 V (d) 3 V

50. In an electromagnetic wave,the electric and magnetizing fields are 100 V/m and 0.265 A/m.The maximum energy flow is

(a) 26.5 W/m^2

(b) 36.5 W/m^2

(c) 46.7 W/m^2

(d) 765 W/m^2

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